

THE MORANDUM

Mora Sestia  
Cape Breton

Lopez 1900

some  
mile or  
first  
stream  
pond found



Record of work done for Chas. D. Walcott,  
Director of U. S. Geo. Survey, on the Cambrian  
formations in Cape Breton during August  
and Sept., 1900.

August 7<sup>th</sup>.

Arrived at Marion Bridge, 12 miles  
from Sidney, at noon. After dinner  
got a boy to show me the way to  
McNeil's Brook where the Upper  
Cambrian beds of Mr. Mathews' section  
outcrop. This brook empties into  
Mira River a mile and a half  
east of Marion Bridge.

Found outcroppings of Cambrian  
shales along the west bank of the  
stream in cliffs 10 to 25 ft. high.

Beddings made up of thin black  
and grey shales with bands of  
hard grey and bluish limestone  
and sandstone. Half a mile or  
more upstream above the first  
bridge crossing the stream  
above the old sawmill pond found

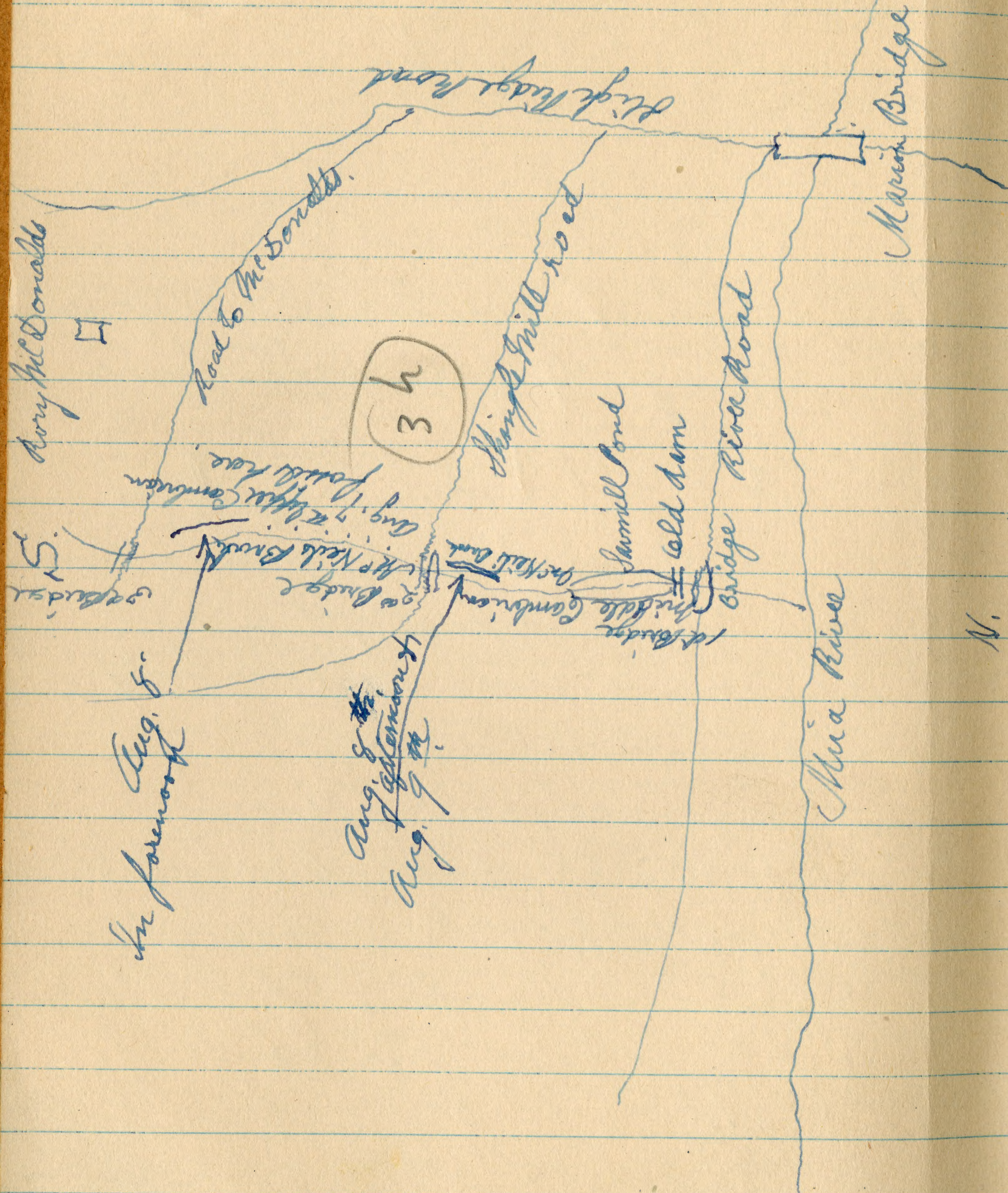
O. Ward Loper,  
Middleton  
Conn. U. S. G. S.

Please return to above address if found.



29.

W.



3.

Many small trilobites and brachiopods. Traced these fossils some distance above the bridge and collected a good number of specimens.



August 8<sup>th</sup>

Followed the Upper Cambrian Shales on McNeil's brook for one and a half miles towards the 3<sup>d</sup> bridge on McDonald road See diagram page 2.

Hired Rory McDonald to help me work up some of the very hard sandy bands out of the water in the bed of the brook. Out of these we secured quite a number of good specimens.

In the afternoon worked down the stream and below the bridge crossed by the Shingle Mill road found ~~Lower~~<sup>middle</sup> Cambrian brachiopods. These were in a hard band in greyish shales about 10 ft. above the bed of the brook on the west bank of the stream just below the bridge. Left the fossils of this bedding for tomorrow. See diagram page 2.

Two localities marked Aug. 8<sup>th</sup> & Aug. 8<sup>th</sup> & 9<sup>th</sup>.  
Forenoon & Afternoon.



6

August 9<sup>th</sup>.

Worked all day on the shale below the bridge on the Shinglemill road on McNeil's Brook and secured a good number of brachiopods.

7.

August 10<sup>th</sup>.

Made a more thorough search for fossils along the Upper Cambrian of McNeil's Brook but found nothing more.

On the hill going east up Shinglemill road found a outcropping of limestone with impressions apparently of small brachiopods. Very indistinct but made a collection.

August 11<sup>th</sup>.

Raining very hard all day and not able to do any field work.



Monday, August 13<sup>th</sup>,

Worked all day on Mr. Mathew Etcheminan at Mc Codrums Brook. Could not find fossils of any kind.

From the exposure of the conglomerates up there are accessible about 30 ft. of grey and blue shales with many hard sandy bands. From this to the next brook for about a mile eastward, the shales are covered.

Mc Codrums Brook is about 2  $\frac{1}{2}$  miles west from Marion Bridge, and north of Mira River.



10.

Aug. 14<sup>th</sup>.

Worked on the different beddings at Mc Codrins Brook until 1 o'clock when a hard rain set in and obliged to quit.

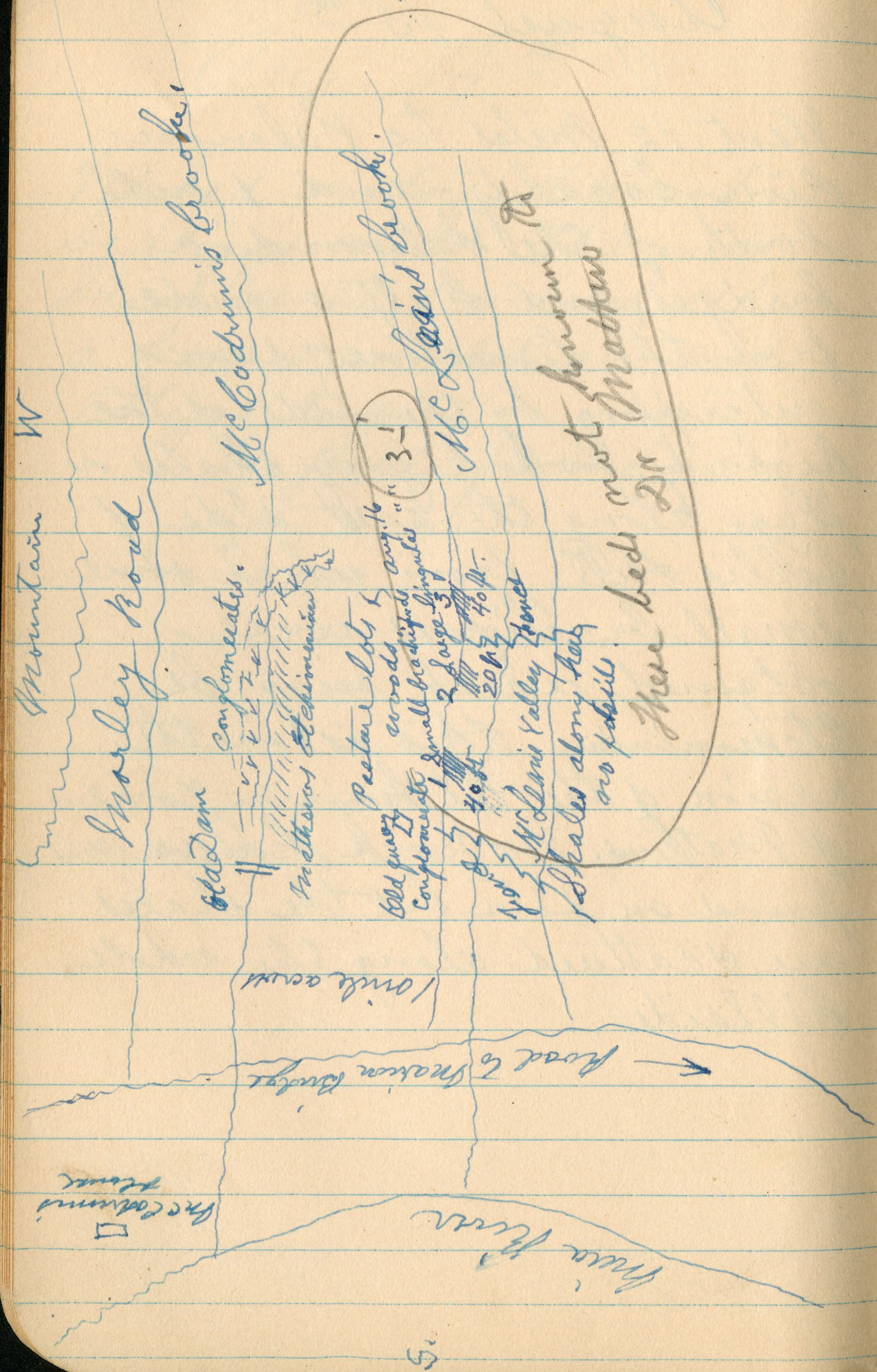
No fossils found.

11

August 15<sup>th</sup>.

Went 12 miles to Salmon River locality, and 1 mile south of the Salmon River bridges, and half a mile from the limestones, seen outcropping by the side of the highway, found grey shales or flags along the east slope of Gillis Hill from which some small brachiopods were obtained which may be Etcheminian. This is in the region of the Etcheminian zone of Matthews. No rock, however, was found in situ, but the shales are scattered along the whole hillside.





August 16<sup>th</sup>.

Worked all day on outcroppings of black and bluish and greyish shales on McLean's Brook. This is the brook one mile east of McCormick's Brook. At first outcropping on the west bank of the brook found a few small brachiopods. At second outcrop of shales as marked in diagram found large Lingulella - or Mathews obolus. Made quite a collection at this outcrop. These evidently belong to the Glenus zone of Mathews section.



14

August 17<sup>th</sup>.

Forenoon raining.

In Afternoon showery but  
went to McLean's Brook and  
collected 20 spec. from  
outcrop No. 2

15-

August 18<sup>th</sup>.

In forenoon searched along  
McKee's Brook which is  
one mile and a half  
West of McGodrum's Brook  
but found no Cambrian shales.

In the afternoon returned to  
McLean's Brook and secured  
a good number of specimens  
from outcrop No 2  
Alenus zone.



Monday August 20<sup>th</sup>

Raining in torrents.

Packed two boxes of specimens and attended to correspondence.

Wrote last week to Mr. Mathew telling him that I could not find any fossils in his Etchemman. Received a letter from him today stating that he was not surprised that I did not find them, that they were very rare. Said they were in the sandy bands of the shale. Shall make another search for them.

August 21<sup>st</sup>

Still raining very hard.

No chance for field work.

Ground up hammers and chisels and wrote letters.



18

August 22<sup>nd</sup>

Still bad weather, but  
 went out to McLean's Brook  
 and worked under an  
 umbrella and collected  
 about 50 fine specimens.  
 These from outcrop No. 2.  
 Showers all day.

19

August 23<sup>d</sup>

Spent the forenoon and until  
 2 P.M. searching again  
 for fossils at McCodrum's Brook  
 on Mathew's Etcheminian.

Found nothing.

Went from there to McLean's  
 Brook and finished the day  
 on No. 2. Got about 40 spec.



August 24<sup>th</sup>

Searched along Morrison's Brook 2½ miles east of Marion Bridge, South Side Mira River. Found in the Cambrian shales there some fine and peculiar trail markings. In ravine near Mr. Morrison's house found a few *Dictyonema* (Brachiopods).

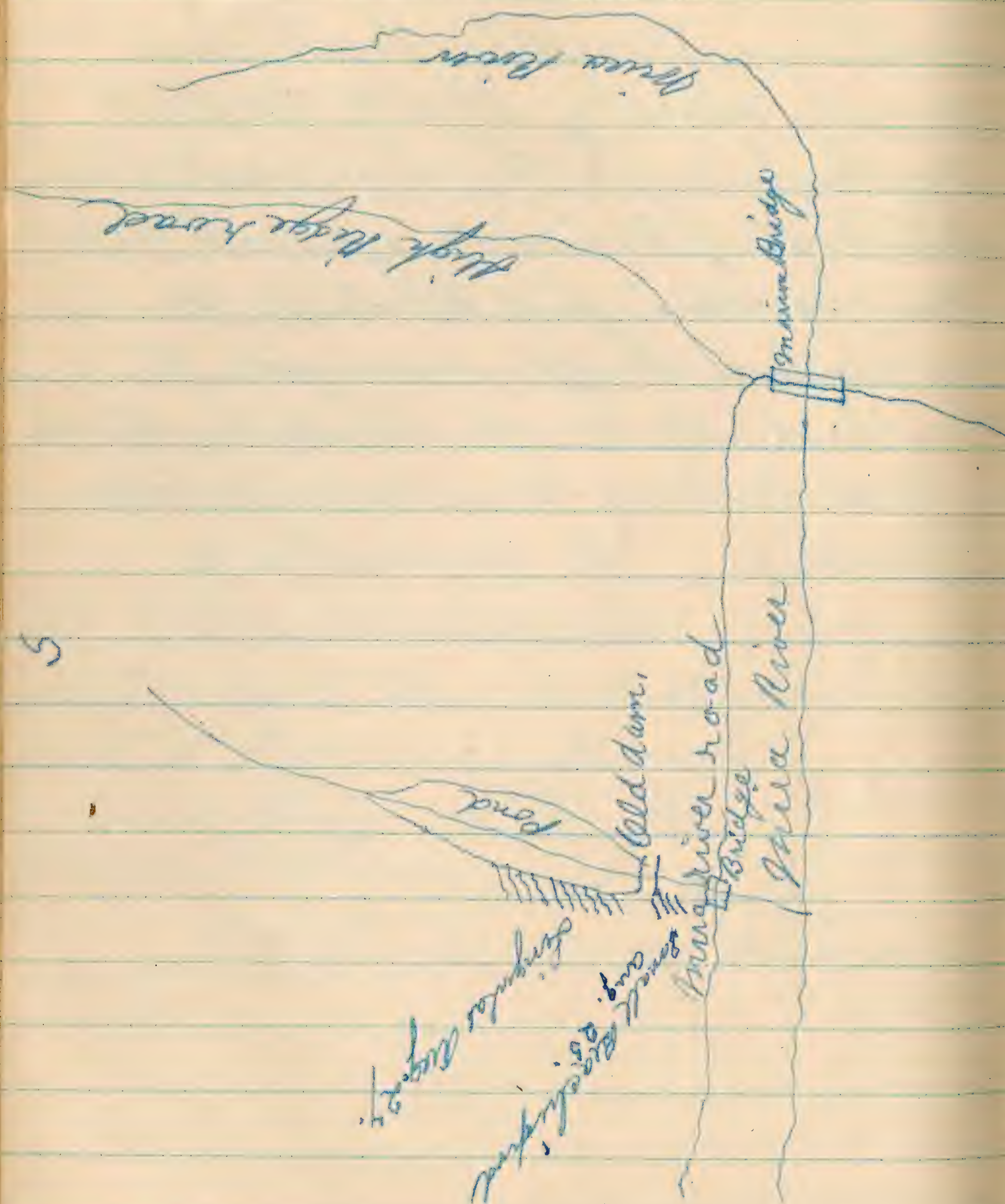
In afternoon searched along Little Trout Brook half a mile east of Morrison's Brook.

Found there on the farm of Daniel Hammond a few nice brachiopods and trilobite trails.

August 25<sup>th</sup>

Unpleasant weather, light rain nearly all day. Went to McNeil's Brook by way of the river road, one <sup>1½ miles</sup> east of Marion Bridge, and near the old dam just south of the river road bridge managed to collect about 75 small brachiopods. These probably *Alanus* zone, Middle Cambrian. See diagram Page 2. Also page 22.





Monday August 27<sup>th</sup>

Had planned to go to Bigkout Brook today, 7 miles east of Main Bridge. Began to rain so stopped at McVeil's Brook and worked on shales south of where collection was made on Saturday. Found very fine lingulas, and, between shows, secured over 100 nice specimens of several genera & species mostly *Lingula* or *Lingulella*. Same fossils found in hard limestone bands as in shale. See opposite page.



August 28<sup>th</sup>.

Went 7 miles out on the  
Bengal road east from  
Marion Bridge, to the forks of  
Big Trout Brook and Little Trout  
Brook where Mr. Mathew said  
fossils were to be found.

Not many were found.  
Searched the shales along both  
brooks for many miles and only  
secured about 25 specimens of  
trilobites & brachiopods. These were  
same as found in the upper Cambrian  
of McNeil's brook. Bad weather came  
on at 4 P. M. & we returned to  
Marion Bridge in driving rainstorm.



26

August 29<sup>th</sup>

Went out Big Front Brook way again to finish up the search in that direction. Searched several ravines leading up from the brooks. Found plenty of shale but no fossils. Along the hillsides were fragments of shales and flags like what Mathew calls Elcheminian but no fossils were in them and none were in situ. People in that vicinity said that Mr. Mathew spent considerable time in the open pasture lots on the drift material.

27

August 30<sup>th</sup>

Drove eighteen miles to Grand Mira. Found there considerable shale and Elcheminian slates but no fossils.

On way back on the other side of the river stopped again at Salmon River locality described on page 11 and looked for more fossils along Gillis hill. Found a very few. These appear to be Elcheminian. Am not sure



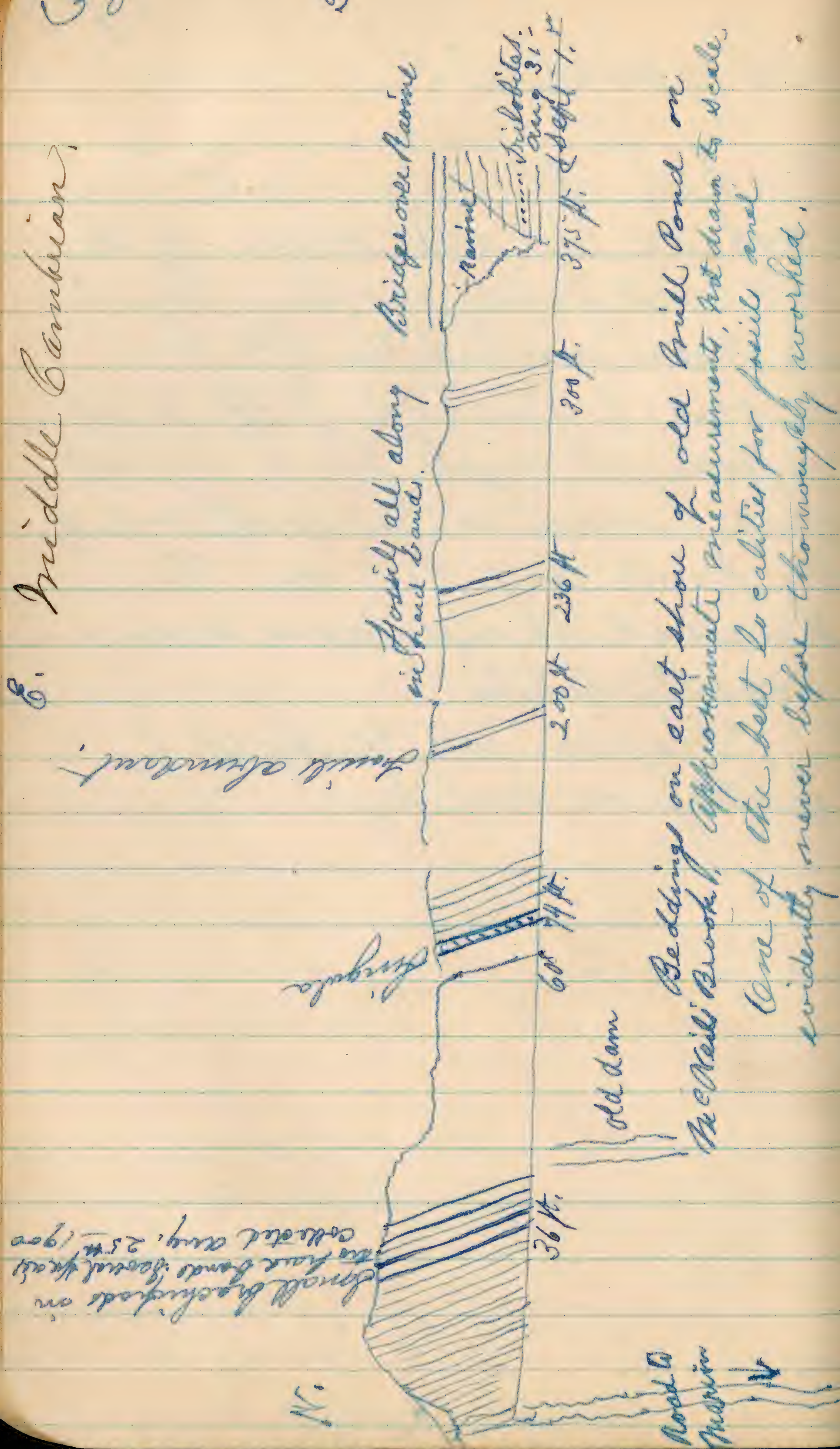
August 31<sup>st</sup>

Worked all day on McNeil's Brook, on the east shore of the old mill pond, working beyond the point worked the 27<sup>th</sup> and secured a fine lot of specimens. Just at night found a fault in a ravine at the south end of the pond and here in the reversed shales found some good trilobites.

Diagram with thickness of beddings on next page.



E. Middle Cambrian.



September 1<sup>st</sup>

Worked through the forenoon on the beddings where the trilobites were found yesterday on the Naime at the head of the pond as shown in diagram on opposite page. Exhausted the locality by noon but secured quite a number of good trilobites and brachiopods. Some of them fine specimens.



Monday Sept. 3<sup>d</sup>

Worked from head of the Pond  
on McNeil's Brook from the  
Trilobite ravine - (page 30)  
going south to the bridge  
at the Shingle Mill road where  
the upper Cambrian comes in.

Examined all the beddings  
carefully but obtained few  
fossils!

September 4<sup>th</sup>

Worked in forenoon making boxes  
for packing specimens. In afternoon  
went to McLean's Brook and got  
60 specimens of brachiopods and  
fragments of trilobites from outcrop  
No. 2 - Diagram page 12.



September 5<sup>th</sup>

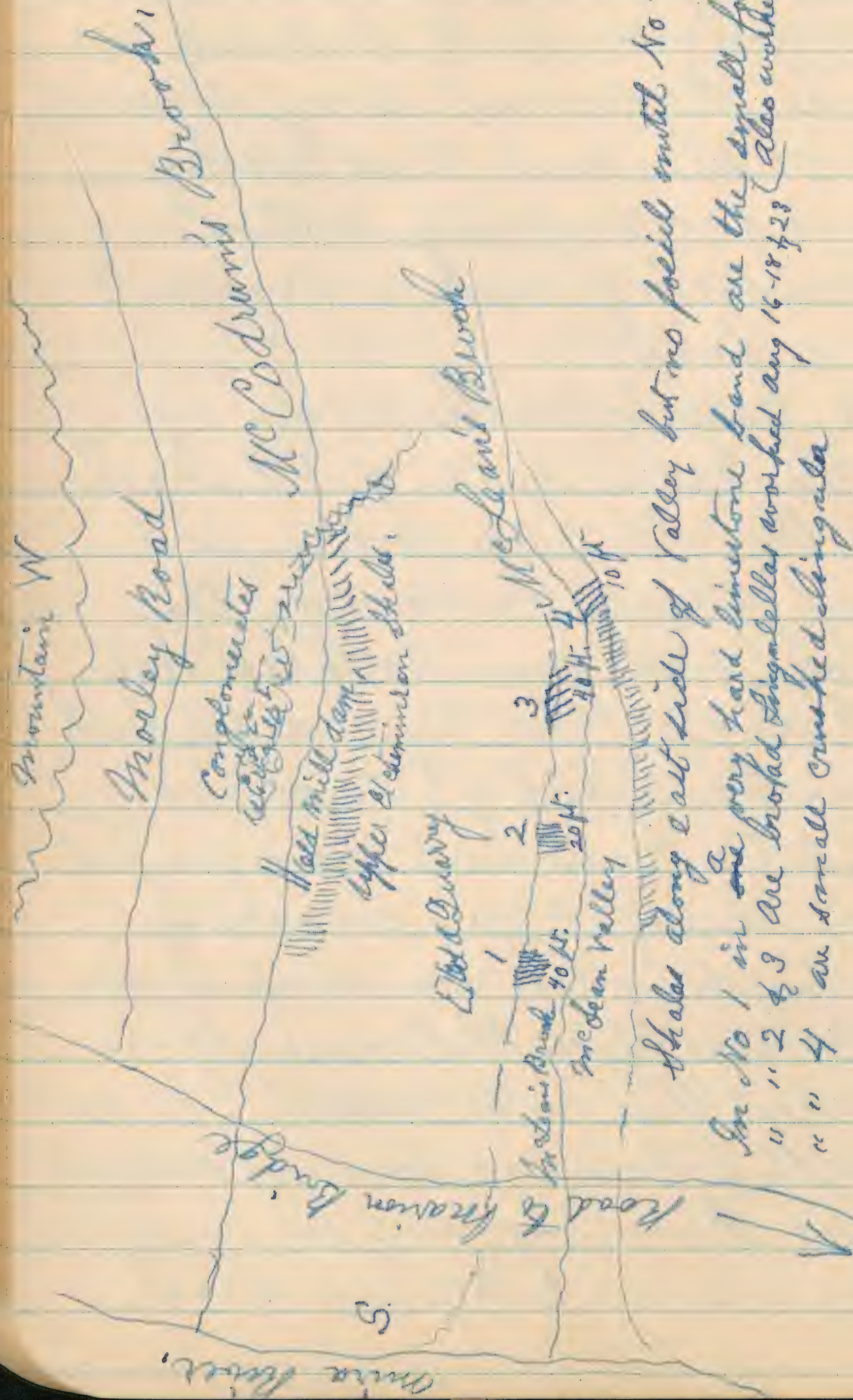
Worked again on Mathews Etcheminian on Mc Bodum's Brook. Examined every layer of the shale and hard sandy bands carefully without discovering even a fragment of a fossil.

The conglomerates crop out on the west side of the Brook near the old dam and a few rods above cross over the Brook and run northeast into the pasture. Where they cross the Brook is seen the contact of the shales.

Next to the conglomerate are a few feet of soft shales, red & grey, resembling Kavlin, above this are about 30 ft.

of Mathews Upper Etcheminian shales and above these in the pasture lot are a few ft. of hard red somewhat calcareous sandstone. From this point for one mile everything is covered to McLea's Brook.





Shales along east side of Valley but no fossils until No 4 is reached.

In No 1 in a very hard limestone band are the small fossils collected Aug 16  
 " " 2 & 3 are broad Lingulellas worked Aug 16-18 & 23 (also worked Sept. 6 & 9)  
 " " 4 are small crushed Lingulella

Sept. 6<sup>th</sup>

37

Worked on outcrop No 1 in McLean valley as shown in the diagram on opposite page. A few specimens were found here Aug. 16<sup>th</sup>. Today quarried extensively into the cliff and got access to the hard band carrying the fossils and was fortunate enough to obtain a fine lot of over 200 beautifully preserved brachiopods. Belonging to the genus *Lingulella* of *Maclure*.

Just at night found outcrop No 3 some distance up the valley. Evidences here of fine fossils. Same broad *Lingulellas* as in No. 2. Shall work this outcrop tomorrow.



Sept. 7<sup>th</sup>.

Worked the outcrop in McLean's Valley found last evening. This will be outcrop No. 3, as shown in diagram on page 36. Found some very fine brachiopods here.

Same species as found in No. 2. Exhausted the find then searched farther north and found another outcrop of fossils in a higher bed where small-lingulas were very numerous but many of them badly crushed. This makes outcrop No. 4 in McLean Valley. Secured a lot of these fossils!

Sept. 8<sup>th</sup>

In forenoon making boxes for packing specimens. In afternoon packing boxes.

Monday Sept. 10<sup>th</sup>

Explored ravines about 3 miles east of Marion Bridge on the north side of Mira River where told there were shales. Found no Cambrian shales there. They lie far above the Cambrian.

Packed my baggage in the evening and tomorrow morning start with my boxes of specimens for Sidney.



40

Sept. 11<sup>th</sup>

Got to Sidney at noon.

After dinner shipped

6 boxes to Mr. Walcott on  
the Plant Line Steamer Florida.

Wrote to Mr. Walcott.

Am to stop here in Sidney  
overnight and in the  
morning go out 12 miles on  
the Interoceanic Railway to  
Leitch Creek where I am  
told there are many fossils.  
This is not far from Mathews  
Boisdale Section.

41

Sept. 12<sup>th</sup>

A very hard rainstorm  
prevailing today and wind  
blowing a gale.

I shall not go out  
to Leitch Creek until it  
clears up.



42

Sept. 13<sup>th</sup>

Took early train this morning from Sidney to Leitches Creek Cross Roads Station. At this station hired a team to take myself and baggage out 3 miles to Angus Johnson's at Leitches Creek on Horrecks Lake where there are fossils.

Mr. Angus Johnson could not keep me but  $\frac{1}{2}$  a mile farther on found a boarding place with Norman Johnson.

After dinner Angus Johnson went with me to the shore of the lake. There were no Cambrian shales there but hard limestones of the Silurian. As nothing else could be done worked there until sundown and secured a number of fine specimens.

43.

Finding that it was only an hours drive from Norman Johnsons to Mathews Boisdale Section concluded in the evening to remain with Mr. Johnson and hired him to help me and furnish team to all the points on Mathews Section. Am to pay him \$2.00 per day for himself and team. and \$3.- per week for board.

As Mr. Johnson has always lived until recently at Boisdale - which is only 4 miles distant, he knows the whole country and is familiar with the shale outcrops. He also knows localities not worked by Mr. Mathew.



44

Talked with Mr. Matthews on my  
return to St. John about the locality.  
He knew nothing about it. Did not  
get on to it.

Sept. 14

45

Sept. 14<sup>th</sup>

Mr. Johnson took me 4 miles to  
Johnson's Brook on his farm at  
Boisdale. A locality not referred to  
by Matthews. Examined the shales  
along this brook from the highway  
where a sawmill is being built.

After going over about 1000 ft.  
of shales, about half way to  
the dyenite on the Mountain  
we found a thick band of coal  
black shales carrying numerous  
small trilobites apparently  
*Sphaerophthalmus* of the *Peltura*  
fauna. Worked this horizon  
until 2 P.M. securing a fine  
representation of the fossils.

Spent the rest of the day  
searching the shales exposed  
up the stream to the dyenites  
on the Mountain. This whole  
stream shows a great exposure  
of Cambrian shales.



46

W  
Frisdale HillBridal Station  
17

McClane's Brook.

4 miles to ocean

No. 1  
2 miles to Upper Litcher4 few fossils  
Sept. 15No. 2 Sept. 15  
fine fossils  
abundant

Barachois Glen

Little  
Bear S' Cr  
Lake

nothing about

Mr. Mathews knows  
this locality

Mountain Range

90

47

Sept. 15<sup>th</sup>  
 Learned last evening of an extensive outcrop of Shales 8 miles south of Mr. Johnson's in Upper Litcher Creek district, we drove down there this morning and found a farmer who knew the locality, hired him to go with us. In a little ravine 2 miles from Upper Litcher Creek we found a few small brachiopods. This ravine is in what is called Barachois Glen. Going a little farther down the glen, and towards the Mountain, we found another extensive outcrop of Cambrian Shales in a ravine through which a small brook runs to McClane's Brook. This is 4 miles from the mouth of McClane's Brook which empties into Little Bear S' Cr Lake. Here we found a very prolific band in the shales and obtained a large number of finely preserved brachiopods. These, also, evidently *Peltura fauna*. Will paid today for hiring extra man & guide.  
 Diagram of locality opposite page.



Monday Sept. 19<sup>th</sup>.

Went this morning to the last locality discovered on Saturday afternoon. Worked there until 1 P.M. and secured a fine lot of well preserved brachiopods of several genera & species.

Then followed up Mc Clane's Brook for two miles examining several shale beds found at two or three points a few fossils.

At 2½ miles found shales in two little brooks running into Mc Clane's brook in greyish shales there we found a few brachiopods and fragments of a trilobite of a large species.

From this point went on to McMullins on the cross road to Boisdale where Dr Mathews had his headquarters when in this region. Found a few brachiopods in the shales south of McMullins.



58.

Sept. 18.

Had rainstorm all  
day.  
No work.

59.

Sept. 19<sup>th</sup>.

Went to Barachois and  
examined shales in the  
R. R. cuttings but found no  
fossils.

In ravine a short  
distance south of the Barachois  
Post Office east of the R. R.,  
on the banks of a little stream  
found shales of the Glenus  
zone and made there a  
good collection of Trilobites  
and brachiopods, all well  
preserved. Found two whole  
Trilobites.

Mr. Athey knows nothing of this  
ravine.



Sept. 20<sup>th</sup>

Went to Barachois and made search along the R.R. cuttings and along the highway and shore of Mainland on Bras d'Or Lake. From here towards Georges River comes in the Pictouman but could not find any fossils. Went north toward Georges River until we came upon the eruptive rocks near Georges River. Then returned to Barachois to the ravine worked yesterday here we got about 25 more good specimens among them one perfect trilobite. Examined 2 other small ravines. Do not see as much more can be done in this region.



September 21<sup>st</sup>  
Stormy day.

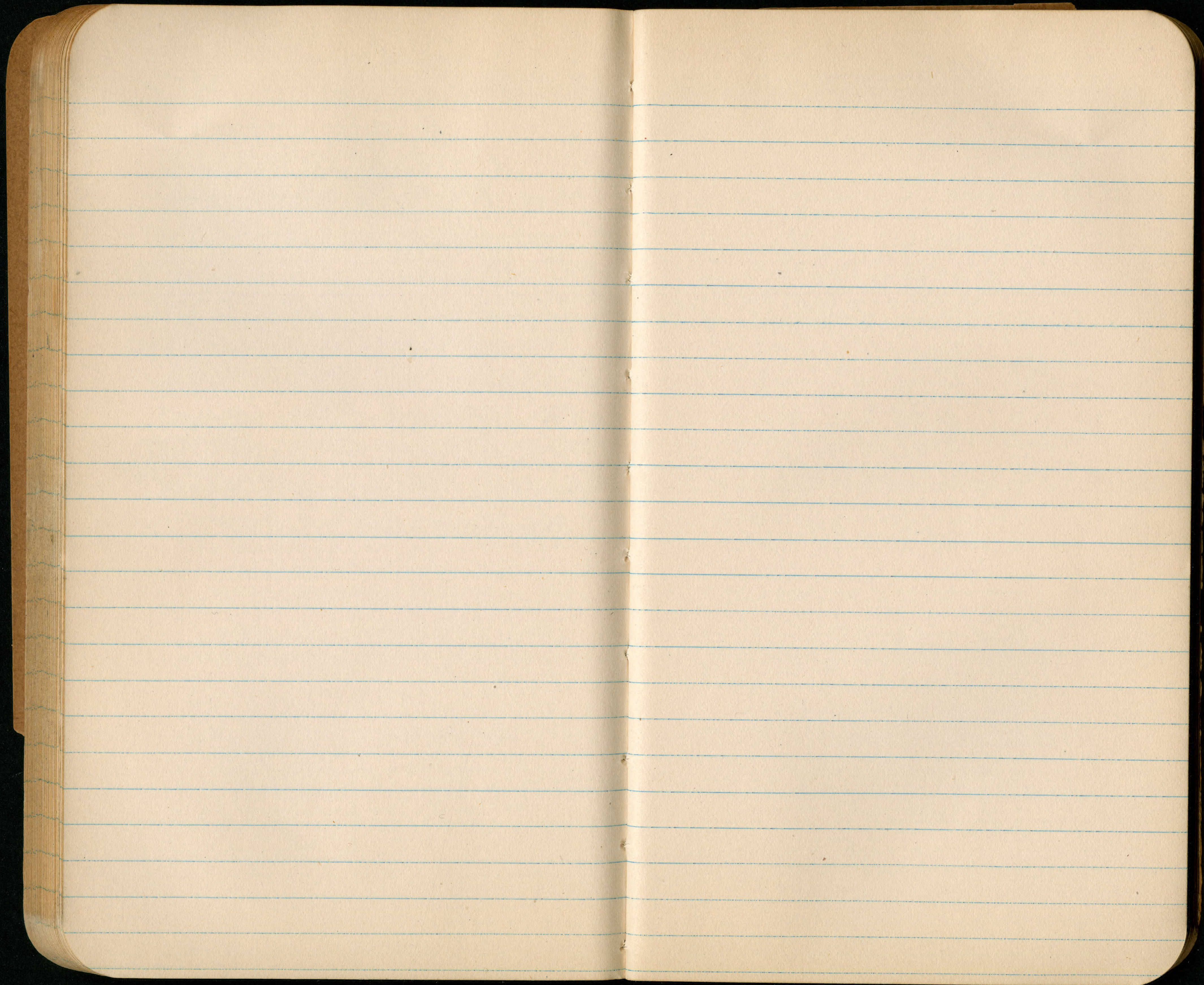
Sept. 22<sup>nd</sup>  
Still Raining

Sept. 23<sup>rd</sup>  
Sunday - Pouring.  
Wind a gale!

Monday Sept. 24<sup>th</sup>

Mr. Johnson carried  
me to North Sydney.  
Packed boxes and packed  
the bundles of the cimens and  
delivered them to the  
Plant Line to be shipped  
to Boston on Oct. 2<sup>nd</sup> on  
the Steamer Florida  
No Steamer to Boston this  
week. Tomorrow start  
homewards.







Localities to be  
numbered 1/1  
Mc Neils Brook one 2 miles  
East of Marion Bridge Cape Buten  
Peltura zone. Mathews

(3h)

Mc Leans Brook, one mile  
East of Mc Bodrums Brook, and  
1/2 miles West of Marion Bridge  
Peltura zone. Mathews.

(3i)

Big Trout Brook 7 miles East of  
Marion Bridge. C. B. Peltura  
Mathews

(3k)

Little Trout Brook 3 miles  
East of Marion Bridge C. B.

(3l)

Morrison's Brook 2 1/2 miles  
East Marion Bridge

(3m)

Salmon River, Gillis Hill  
13 miles South of Marion Bridge  
May be Etchemin

(3n)

Bara chois, C. Buton  
1/2 Ravine South of Post Office  
East Little Bras D'Or Lake  
Peltura zone

(3o)

m.c.

Boisdale & Buton  
Ravine 1/2 mile South  
of Mc Mullins cross road  
Road to Boisdale Station  
Peltura zone

(3p)

Bara chois, C. Buton  
4 miles South of  
Little Bras D'Or Lake  
Peltura zone

(3q)

Johnson's Brook, Boisdale  
Peltura zone  
1/2 mile East of Little  
Bras D'Or Lake

(3r)

Foresters Lake  
Leitch Creek, C. B.  
Silurian

(3s)

m.c.



